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ABSTRACT

This booklet is the eleventh of a series of 16 booklets that together describe and present findings for a study which involved field observations and a survey of science teaching and learning in American public schools during the school year 1976-77. The study was undertaken to provide the National Science Foundation with a portrayal of current conditions in K-12 science classrooms to help make the Foundation's programs of support for science education consistent with national needs. Eleven high schools and their feeder schools were selected to provide a diverse and balanced group of case study sites. One field researcher was assigned to each site and instructed to find out what was happening and what was felt important in science (including mathematics and social science) programs. The case study report from the "Vortex, Pennsylvania" site is contained in this booklet. (MN)

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Constance Bowen &
Mary Birkin

Booklet X
Vortex as Harbinger
Gordon Hoke

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Case Studies in Science Education
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270 Education Building
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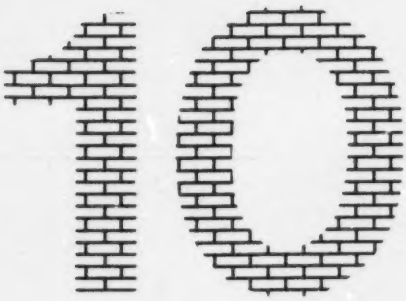
BOOKLET X

VORTEX AS HARBINGER

Gordon Hoke
University of Illinois

May 1977



The trials and tribulations of northeastern United States have not passed by Vortex. This older city of ethnic neighborhoods has witnessed a fifty percent drop in its public school enrollments and a catastrophic decline in economic fortunes. Coal mining characterized its early days; now Vortex is clinging to a handful of industries and its place as the hub of a ground transportation network.

Pennsylvania has a reputation for volatile exchanges in the domain of collective bargaining: again, Vortex is no exception. The state educational agency is known for placing regulatory demands on local districts and for its implementation of intermediate districts beginning in 1963. All of these elements are captured in the following portrayal.

We particularly sought the cooperation of Vortex residents and schools because of their purported relationships with the intermediate unit. Our study confirmed this situation. In addition, we were struck by the presence of a trio of other factors: (1) an outstanding middle school (grades 6-8) based on an "open space" concept; (2) widespread utilization of instructional media in the elementary grades; (3) a growing sense of dependency, by both community and educational institutions, upon the federal government.

Circumstances unique to the Vortex setting offered an opportunity for conducting a comprehensive site visit. The pair of site study reports accompanying the case study highlight items one and two; closing pages of the study serve as a backdrop for anticipating future expansion of state and federal policies in the operation of local schools.

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VORTEX AS HARBINGER

Gordon Hoke

FIRST IMPRESSIONS

"It's the center of ethnicity," declared a young businessman who boarded my Allegheny flight in Pittsburgh. "Sometimes your departure from the plane is delayed because fifty or so relatives and friends may be on hand to greet an arrival--and you know how they care for one another." At noon the following day, a school supervisor and native of the city added to his remarks. I had commented on the beautiful, old-world architecture, and she replied:

> *Yes, it's a reflection of our great mixture of peoples. We have few blacks and Hispanos, and most of those who are here arrived many years ago; but the city was settled by Italians, Welsh, Irish, Polish, and Slavic immigrants. The Julian calendar, for example, is still observed by numerous families in the area.*

Later, the high school principal said: "If you're looking for a place to study problems, you've come to the right one because we have all of them." He was referring to a prolonged teachers' strike a year past, to continuing fiscal difficulties, and to a recent court decision upholding an arbitrator's decision that department heads should be reinstated in secondary schools. During the approximately thirty-six hours of my initial visit, a veritable litany of issues was confronting school officials. Assistant principals in the high schools and junior highs were rearranging pupil and teacher schedules in order to accommodate the court decree. Supervisors and coordinators were implementing cutbacks in curriculum offerings in response to budget slashes. Meanwhile, students were staging protests, signing petitions, and generally opposing those same reductions. The day before, the city library had announced curtailment of services because the board of school directors had refused to increase its financial subsidy to this civic institution, and the board also had become embroiled in conflict with a local public employees' union as a result of the former's decision to hire a private firm to collect taxes rather than continue reliance on a municipal authority. Such activity appears to be indigenous to the community, because it is described by a local newspaper as "a highly politicized town with a history of wrangling and ethnic divisions." Descriptions of activities related to primary elections and "Letters to the Editor" lent additional cooroboration to this assessment.

Given the set of circumstances outlined above, "Vortex" appeared to be an appropriate pseudonym: "a state of affairs characterized by rapidity of change, constant excitement, sometimes a rapid round of activity."

THE SETTING

Last year, Vortex hosted a Bicentennial meeting of Superintendents of Schools from cities of 100,000-300,000 population; and it is a member of the state's organization of

Urban Pennsylvania Superintendents (UPS), representing the eighteen largest cities in the Commonwealth. A comment appearing in a position paper drafted by this coalition in October 1976 is particularly germane to an appreciation of the past, present, and perhaps future of Vortex and its counterparts.

> *Good schools, we suggest, will aid in attracting those vibrant middle-class people with assets, both human and fiscal, back to the cities which continue for the time being as centers of housing developments, health services, culture, banking, commerce, and transportation.*

Despite its membership in an association of urban districts, transactions in Vortex are influenced more by the draw of suburbia than by an influx of colored minorities. The demographic pattern is summarized in Table 1.

Table 1

Student Enrollment--1976-77[1]

American Indian	8
Asian	28
Black	246
Hispanic	24
White	13,300
Total	13,606

But the old buildings, which appear so stalwart and impressive to an observer from the austere flatlands of Illinois, symbolize the problems. High ceilings, lack of insulation, and large windows through which winter winds whistle their expensive sound are integral parts of the administration building. Some "overflow" classes from the nearby high school are held inside. A tiny elevator operated by a friendly woman takes visitors to the third floor offices of the superintendent and his staff. Harassed by calls for cost-effectiveness, troubled by both energy shortages and expenses, caught up in a stormy sea of collective bargaining and legal mandates, administrative personnel are afflicted by the same conditions as their physical plant: they are valiantly trying to cope with circumstances which sorely test the limits of their ability and endurance.

The effects of age on Vortex schools and other community institutions are compounded by the uniqueness of the surrounding terrain. Downtown Vortex is literally "central city" located at the bottom of a valley. Travel in every direction from the business district to various sectors of the school district leads one up the hill. Students and teachers make frequent references to the "valley," its attractions for them and past generations of their families. Combined with the dominant influence of local colleges and a Jesuit university, this emotional pull helps create an insular effect. There is a universal, often humorous, recognition of this situation, but it also adds an exponential variable to the ups and downs of the social-political-economic climate. Whether or not the faltering economy can sustain future generations of local residents is an issue of grave concern.

The administration building, high school, and public library form a right angle as depicted in Figure 1. A few hundred yards north of the high school is another of the city's trio of senior highs. Years ago, when only two existed, this pair represented very specialized versions of college-prep and vocational schooling. Today, there is a more diversified student body in each site and the district is a member of the area (regional) vo-tech program.

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[1]These figures are for public schools only. Three secondary and fifteen elementary parochial schools, predominantly Catholic, enroll approximately 3400 pupils. Student populations peaked in the early 1930s when the public schools were accommodating about 25,000.

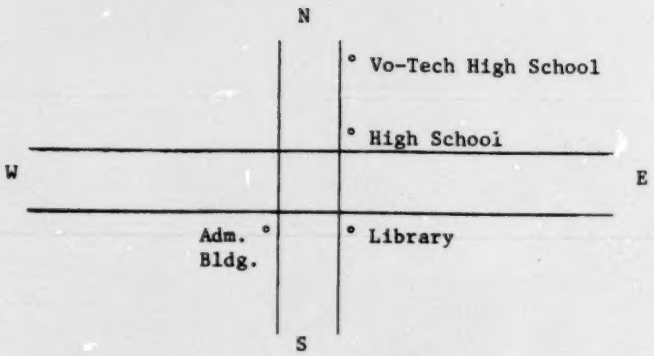


Figure 1. Key Locations - Downtown "Central City"

A few blocks south of this cluster are the downtown business district, municipal offices and the county courthouse. In close proximity are the county's junior college, the university, and the headquarters of an Educational Intermediate Unit. The state is divided into several (twenty-nine) regions each served by one of these agencies. Vortex was the only one of our eleven sites to maintain a working relationship with this type of resource base. Members of the "IU," as they are known in Pennsylvania, were extremely generous, and we spent several hours together. They work with school districts in three counties, offering programs and support services for teachers, administrators, and students. One of our junior high social science respondents is a member of the IU's Council on In-Service Training; its counterpart deals with program development. Her attempts to broaden the base of civic understanding were formalized by the process described below.

> *The Pennsylvania Department of Education has approved an in-service course entitled "Pennsylvania Local and State Government - 1976" to be offered by [the IU] for in-service credit only. The University has also approved the awarding of three graduate credits for the payment of a fee of $40.00 per credit.*
>
> *The course is open to all elementary and secondary teachers in the Vortex School District. Mrs. X, a teacher of social studies at East Vortex High School, has devised and will conduct the course. Those wishing to attend should register with their building principal by March 5, 1976.*

The excerpt above was part of a form letter sent to all members of the teachers' union; a briefer message appeared in a memorandum released by the superintendent's office. Earlier, the teacher had submitted an "application for State Approval of In-Service Credit" to the IU, which in turn channeled it to the State Department of Education. Teachers and IU staff alike are justifiably proud of their record in winning approval of such offerings.

WORKING GUIDELINES

In the CSSE Statement of Scope and Purpose, we had guaranteed anonymity to the sites, leaving the decision to publicize involvement in their hands. Two of the systems with which I worked chose to make an early announcement.

On January 24, 1977, the Vortex Board of School Directors formally approved a resolution concerning participation in the study. A statement also was given to the news media, February 10. It read:

> *The case studies are intended to provide background information regarding programs, procedures and problems as seen by teachers, administrators and students in order to show a national story of education in [three] vital areas. The purpose is to understand rather than compare.*
>
> *We consider it a distinctive honor to be part of the National Science Foundation project and I [the superintendent] am sure that our district personnel and community representatives will respond in a spirit of real cooperation.*[2]

During the four weeks on site, I worked in one high school (see above), three junior highs, and three elementary settings. Figure 2 portrays this arrangement; fiscal data is found on the next page, Figure 3.

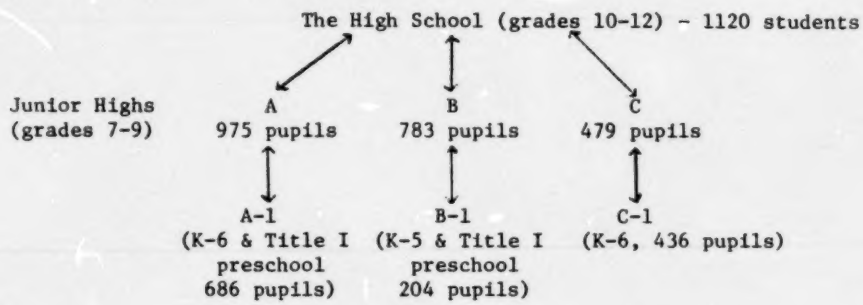


Figure 2. Study Sites[3]

I concentrated on three sources of information during this period:

1. Interviews with instructional supervisors and subject-matter coordinators, teachers of social studies and social sciences, relying heavily on a trio of questions viewed as central to our efforts.
2. Numerous classroom observations in both elementary and secondary schools.
3. Discussions with certain board directors and members of the curriculum and instruction division of the Educational Intermediate Unit.

---

[2]All were extremely generous.

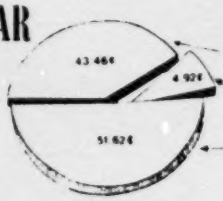
[3]In addition, the site study team spent several hours with teachers, administrators, and pupils in the Middle School, grades 6-8, enrollment of 995.

Figure 3. Vortex Schools Budget - Fiscal Year 1975

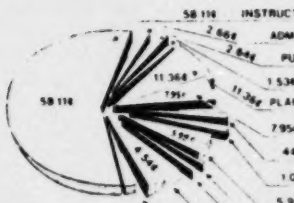
V-O-R-T-E-X SCHOOLS BUDGET — FISCAL YEAR 1975

THE BUDGET DOLLAR

Where it comes from...



43.46¢	STATE	$9,531,480
4.92¢	MISCELLANEOUS	1,078,203
51.62¢	LOCAL	11,320,647
	TOTAL	$21,930,339



Where it goes...

58.11¢	INSTRUCTION	$12,743,437
2.66¢	ADMINISTRATION	584,035
2.64¢	PUPIL PERSONNEL SERVICES	578,100
1.53¢	PUPIL HEALTH SERVICES	334,573
11.36¢	PLANT OPERATION & MAINTENANCE	2,492,145
7.95¢	FIXED CHARGES	1,745,378
.44¢	COMMUNITY SERVICES	96,750
1.05¢	CAPITAL OUTLAY	231,000
5.99¢	DEBT SERVICES	1,312,760
.46¢	FOOD SERVICES	101,600
.96¢	STUDENT ACTIVITIES	210,150
4.54¢	OUTGOING TRANSFERS	994,800
2.31¢	PUPIL TRANSPORTATION	505,611
	TOTAL	$21,930,339

WHERE THE MONEY COMES FROM

43.46% — STATE The bulk of the Non-District Revenue comes from the Commonwealth of Pennsylvania (State sources). This income is received through appropriations and special reimbursements granted to almost every school district in the State.

4.92% — MISCELLANEOUS Included in this description are the District's Opening Cash Balance (1-1-75), Federal Source Revenues, Incoming Transfers and Receipts Contra to Expenditures.

51.62% — LOCAL Tax Revenue constitutes the bulk of this local source money. Various forms of Tuition, Interest Income from Temporary Deposits, Rental Income and other Miscellaneous Income complete the Local Source Revenue.

WHERE DOES THE MONEY GO?

INSTRUCTION: 58.11%, the largest expenditure category of the 1975 Budget, calls for approximately $12.7 million dollars expended for Pupil Instruction. Included in this item are expenses such as Salaries for Professional Employees, Non-Certified Supporting Personnel, Textbooks, Teaching Supplies, Library Books, and Audio Visual Supplies.

ADMINISTRATION: 2.66% of the 1975 Budget is provided for Administration Expenses of the School District. Included in the category of Administration are expenses for operation of offices of the District Superintendent and his assistant, the Secretary-Business Manager and his assistant,

PUPIL PERSONNEL SERVICES: 2.64% represents services included under the Pupil Personnel category of the 1975 Budget. Expenses for Pupil Guidance and Psychological Services, Attendance Officers and Pupil Accounting Office are included in this item.

HEALTH SERVICES: 1.53% of the Budget is to be expended for Pupil Health Services. Included in this item are expenses for Pupil Medical and Dental Examinations, operation of the District's Dental Clinic, Salaries for School Nurses, and Salaries for the Medical and Dental Staff.

OPERATION AND MAINTENANCE OF PLANT: This item, representing 11.36% of the Budget, includes salaries of Director, Custodial and Maintenance Staff, Replacement of Instructional and Non-instructional Equipment, Contracted Maintenance, Fuel, Utilities and Sunday Supplies.

FIXED CHARGES: This category refers to payments by the District of its share toward Employees', Retirement and Social Security Funds, as well as the costs of Workmen's Compensation, Employees' Benefits, and insurance on the District's buildings. This item represents 7.95%.

COMMUNITY SERVICES: .44% of the 1975 Budget is earmarked for Community Services. This category provides for the District's share of cost for the Summer Recreation and School Crossing Guard Program; also contributions to the Public Library, Philharmonic Orchestra, Museum and the Child Guidance Center.

CAPITAL OUTLAY: Under this category expenditures are made for purchase of new instructional and non-instructional equipment for all School District facilities. This item represents 1.05% of the 1975 Budget.

DEBT SERVICES: This 5.99% of the District Budget provides for payments and Authority Rentals, and funds set aside to provide for the payment of principal and interest on outstanding bonds.

FOOD SERVICES: .46% While the Federal Lunch Program is now in operation through a contract with ARA, the District still must underwrite a variable amount of the expenses. These are placed in this category.

STUDENT ACTIVITIES: .96% This category encompasses a variety of activities for the students beyond the general academic curriculum, including cost of sports.

OUTGOING TRANSFERS: 4.54% This is a major non-cash category embracing the expenses incurred in services from N.E.I.U. #19, and the cost of educating the children at the Vocational Technical school, plus services for the handicapped.

PUPIL TRANSPORTATION SERVICES: Monies expended from this category must cover the day-to-day costs of transporting pupils in the District. 2.31% of the 1975 Budget will be expended for pupil transportation.

Although attempts were made to visit a large number of classrooms throughout the cluster of study sites, few recorded interviews were conducted with instructors other than those in social studies. Instead, I made arrangements for local teachers of mathematics and physical science to hold exchanges with members of our site study team. We had an opportunity to execute a comprehensive visitation in Vortex, and it seemed wise to capitalize on this good fortune.[4] Our intent, though, met opposition from the weather: we lost one day of the site study period to "the effects of one of the worst storms to strike [this] area in many years." It was a fitting climax, for Pennsylvania was one of the states hardest hit by the severe winter of 1976-77.

A pair of "mini-portrayals" are included in this report. They build on the foundation outlined above and feature the areas of secondary physics and remedial mathematics in the primary and elementary grades.

THREE PRINCIPAL QUESTIONS

"The total CSSE project has three principal questions to answer," wrote Bob Stake in October 1976. The trio included:

Question No. 1 - "What is the status of precollege science teaching and learning today?"

Question No. 2 - "What are the conceptualizations of science held by teachers and students?"

Question No. 3 - "What happenings in school and community are affecting the science curriculum?"

Responses offered by Vortex teachers, administrators, students, and parents should be interpreted against the background sketched below.

In December 1950, the superintendent prepared a document entitled Proposed Curriculum Changes and Revisions for the Board of School Directors. It stressed:

> *Science education which only a few years ago was largely optional and integrated in the lower grades has now become a major responsibility of the school. . . . Today, if the teacher is to meet her responsibility she must help the children, in ways appropriate to their maturity, to understand causal relationships and systematic approaches to the observation of phenomena. Moreover, even the young child must become more informed about the place of science and technology as major factors in modern life.*

A decade later, his successor--who served the district for almost thirty-five years as a teacher and administrator--wrote:

> *It has been frequently stated that the primary function of the schools is the cultivation of the mind, especially as regards the basic mental skills. . . .*

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[4]Two of our team members were mathematics professors at the local university. Both were natives of the area and well acquainted with its schools. In truth, they were part of the Vortex "family."

But it is equally apparent that this is not the sole function of the schools, for the community expects them to serve many other functions involving the vocational, civic, emotional development of young people.

In our own friendly city it is often heard that we don't have much of a future. . . . If we are to meet the economic, cultural and social needs that Vortex confronts, the heart of its program must be a strong system of universal education. Every other effort at community improvement will be limited or facilitated by the understanding, the competence and convictions of the citizenry.

Another superintendent entered the scene in the early 1970s, and he was presented with a report fashioned by a group of consultants. Its title read: Vortex: Schools at the Crossroads, A Long Range Development Program, 1969-78.[5] The planners declared: "Vortex schools are indeed Schools at the Crossroads, both physically and educationally." And a closing judgment by the board of directors' president asserted: "At this stage in the history of public education there is probably no public endeavor that is more important or more expensive than the education of our youth." His words served as a prelude to an October 1, 1976 news release. Presented in behalf of the Organization of Urban Pennsylvania Superintendents, it confessed that "statements of philosophy among the cities diverge widely; nonetheless, one fact is irrefutable. . . ." The report continued: "each participating school district and its municipality exhibit similar identifiable symptoms." Among those cited were the following.

Before they can be taught, many urban students require the services of social workers, welfare visitors, court officers, policemen, probation officers, and tribunals.[6]

We believe that municipal governments, school districts, and counties are inextricably intertwined with public funds being the binding mastic. All three units are contributing to one another's bankruptcy. School districts and municipalities are creatures of the State, and when they fail, the counties and the State suffer, too.

The high school was preparing for a Middle States Accreditation visit in December 1977. Hence, all facets of the curriculum were undergoing scrutiny and possible revision. At the same time, financial pressures were causing reductions in the number of course offerings, particularly social studies and English. "They've cut the heart out of our electives program," lamented Kurt Karens, chairman of the social studies department and building representative for the American Federation of Teachers. During a brief earlier visit in January, his district-wide supervisor had told of her efforts to preserve some semblance of "integrity" for the secondary program.

Class size has also increased, but the range of courses, at least on paper, is still impressive. It must remain that way if one of the general objectives for social studies, grades nine through twelve, is to be honored. The tenth and last objective states:

Acquiring knowledge and learning the basic concepts inherent in the social sciences; geography, history, economics, sociology, political science, anthropology; developing skills essential to these fields.

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[5]All districts in Pennsylvania are required to file a similar plan with the state agency by 1978. Pennsylvania has a record of state involvement in local operations beginning with the School Reorganization Act of 1963 and the more recent "Ten Goals of Quality Education."

[6]The county probation officer told the city council of an "alarming" rate of broken families in the area surrounding Vortex.

The following remarks, one by a teacher and one by a student, reveal their perceptions of this range of offerings.

> *Unfortunately [Kurt rebutted], social science is too often seen as a synonym for a collection of courses--often lacking in sequential development--a course here and a course there--with the belief that by offering such courses, the student learns once and for all.*
>
> *[An outstanding senior responded:] I want to learn about people, about how we can live together more peacefully, that's why I'm taking courses in sociology and psychology. In history, you keep repeating what you've been taught before.*

The K-12 coordinator of social studies basically agreed. Referring to the emphasis on world and American "cultures" in the junior and senior highs, she indicated that the district was trying to implement a new curriculum in the lower grades. "It will mark a shift from history to social science," Maureen declared.

Pennsylvania's State Board of Education mandates much of the social studies curriculum. Six units (years) are required in grades seven through twelve, with the content of four units established by state regulations. Mathematics and physical science are granted more latitude, but Kurt's earlier observation is not seriously challenged in these domains.

Advanced placement classes are still available in chemistry, American and European history. Instructors, though, are greatly concerned about infringements on class time, about the need to accommodate contemporary affairs while preparing pupils for traditional demands of tests, and about changes in motivational patterns of youth. A session in advanced placement American history, eleventh graders, underscored the complexity of classroom transactions.

The topic was "assimilation." A Jewish student was presenting a report on the experiences of his people; parts of it touched on the policies of Adolph Hitler. As the paper concluded, a classmate referred to a "60 Minutes" episode the previous Sunday regarding the American Nazi Party. An interesting, dynamic period ensued, but was brought to a rather abrupt close by the instructor. Later, when we were discussing the series of events, she explained:

> *I literally don't know how to balance off current affairs with the need to cover material. They often introduce fine examples from televised programs, yet I know that the [advanced placement] exams are heavy on content coverage. We used to have several 4s and 5s [top scores]. Last year we didn't have any 5s, and several 3s were received.*

Interactions with students suggest that reasons for taking certain courses are changing--that is, math, science, and the social sciences are seen as <u>tools</u> for eventual careers or jobs in health and medical fields, in other realms of social service, as a means of understanding self and others, and not as a prelude to becoming a mathematician or scientist. The number of extra-curricular activities identified with social services is increasing and students are aware that for them the "services society" means jobs as well as higher taxes for their parents. A senior in chemistry noted: "We've started a medical/health careers club and have about fifty members. There's lots of interest." In response to a second question, he responded: "Because of prestige, money and jobs."

The coordinator of English and social studies was spending her last year in the city. Her contemporary in science had suffered a fatal heart attack midway through the school term. Their counterpart in mathematics was temporarily assigned the latter's duties and an internal assessment of science instruction and learning was begun during my stay in

Vortex. Similar efforts in mathematics had already been completed. Under his leadership the math curriculum had been revised on a K-12 basis; it features such components as Title I "Math Labs" in the elementary and junior high schools, a local adaptation of one of the modern math programs at the elementary level, and is climaxed by calculus and "computer statistics" in the senior high. Comprehensive efforts in metrics education are underway.

Physical science in the high school is based on the usual pattern of biology, chemistry, and physics, but with a notable exception: physics is seen as a course for juniors, chemistry for seniors. The rationale for this sequence is explained by the "mini-portrayal" below.

A Question of Maturity

"Yes, you normally find seniors taking physics," agreed James Romano, a youthful instructor of intermediate algebra and PSSC physics. "But then," he added:

I've talked it over with Joe McCauley, who's taught all the sciences at one time or another in this school, and he says the kids need that extra year of maturity for chem lab. Personally, I'm undecided, because Paul [his physics cohort] and I are concerned about the math requirements for physics.

I had begun the day by attending Paul's lecture in physics. He and James alternate between PSSC and "regular" classes. When I inquired about student selection procedures, Paul indicated that sophomore science instructors were asked to recommend students for PSSC classes. He noted:

Actually, James and I are more concerned about math competency than their references from science classes, although we've never done any follow-up studies to see if math is as big a factor as we believe.

Both Paul and James were using experimentations in their rooms. A film strip, presented and narrated by a student, was serving as an introduction to a unit on temperature and its effects on matter. Paul opened the period by wondering aloud: "Which would freeze first, hot or cold water?" No consensus was obtained, so small containers of heated and tap water were placed outside the window. A student was asked to chart changes in temperature on the board at five minute intervals. The film strip was not outstanding. Paul directed attention to a caption and said: "Now that's a terrible sentence! There has to be a better way of expressing that point." He asked for some illustrations and provided two of his own. When I complimented him at the close of the period for this action, Paul replied: "Every teacher's a teacher of reading and writing. Whether or not you want to be, you are."

PSSC students were examining principles of velocity and acceleration, relationships between motion and production of energy. James and a student began the double-session with a series of demonstrations followed by students pairing off and moving into the laboratory to conduct similar investigations. Several remained after the dismissal bell to complete their work, to make up tests, and to engage in friendly banter with the instructor. Paul and James are co-sponsors of the Physics Club; both men have an easy, informal relationship with students. As I left the physics lab, I spoke favorably of the warm, responsive atmosphere present in their classes throughout the day. James nodded in the direction of a handful of pupils and commented: "They make it worthwhile. I don't know how you can teach and not like to be with kids."

James and Paul are graduates of the local university, as are many of their colleagues at both secondary and elementary levels. Earlier in the week, a consultant on the IU staff cited problems elementary teachers were having with "inquiry methods" and the new K-6 social science curriculum "Our Working World." He attributed part of their difficulty to deficiencies in preservice education because "[that] school is heavy on subject matter but weak in the area of instructional methods and classroom demands." The district coordinator of social studies basically agreed. "Teachers are experiencing difficulty with the inquiry approach," Maureen said, "and we simply don't realize what it means when we suggest to an instructor that she needs to change her classroom practices."

David Hamilton's suggestion (in CSSE Statement No. 8) that "integrated curricula may be worthy of special attention by CSSE observers" is pertinent to an understanding of science education in Vortex. Enrollments in physics and chemistry are declining; science instruction is "on the back burner in elementary grades," warned the supervisor of preschool-6 operations. In the junior highs, a cadre of instructors is trying to combine social and physical sciences in the name of "Earth and space science." Transactions in the name of environmental education may not yet be grand versions of "integrated curricula"--in my judgment much work remains to be done with respect to using methodology capable of linking student knowledge of and interest in contemporary events to factual content--but they appear to be an important step in that direction.

The supervisor of secondary education for Vortex is obviously proud of the developments related to environmental education. Aided and abetted by the Intermediate Unit, two instructors from the high school's nearby cohort are participating in a pilot project. Their emphasis is on social activism, student involvement in neighborhood or community studies of pollution's effects, etc. Their contemporaries at the high school are relying on a more subject-centered approach. Two young women operate as a team: one holds an M.A. in history-social science; her partner is working for a master's degree in biology. The course (elective for juniors and seniors) is divided into quarter-terms with students alternating between instructors on a quarterly basis. A year ago, the biology teacher taught the course alone. "I couldn't handle the interdisciplinary demands," she said. "Very quickly you're into economics, or law, or politics; even today, when we have a unit on solar energy the students try to carry discussion of issues into physics or chemistry classes."

Other developments were summarized by a junior high principal whose career has been identified with science education. As a high school instructor, according to the associate superintendent, "he was a good teacher and a tough one, but the kids liked his classes." The principal is still active as an instructor in a small Jewish prep school.

> *Teachers are very uncomfortable with science [he asserted]. You really can't blame them. Personally, I think instruction in science should be left to the upper grades. About all you can ask for is solid preparation in reading, especially comprehension, and mathematics when they reach you in the junior high.*
>
> *I'm not happy with what's been happening in recent years. We now have life science for one semester at the seventh grade; physical science is offered at the eighth grade. Have you seen that book? Boy, it's tough, particularly in the math requirements.*[7] *Earth and space science is the ninth-grade course. Rarely is it completed--lots of sophisticated topics--and the district has invested considerable money in texts and related materials. The state pushed it; most teachers aren't prepared for it.*

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[7]An opinion shared by staff in all three junior highs.

Actually, we've lost in the process. Mathematics is dominating the junior high science curriculum so fewer students choose it at the upper levels because they're "turned off." The eighth grade course is so demanding and has replaced general science as a stepping stone to high school. The latter was much better because it was a good introduction to biology, physics, and chemistry.

His admonitions about computational demands were reflected in the presence of Title I math labs. Two function solely for primary-elementary pupils; the other pair are located in two of the junior highs. The mini-portrayal describes operations in one of the K-6 grade schools.

A Matter of Choice

"We are barely into our second year with the Title I Math Lab at this school," the principal noted.

This was a K-8 school, but was changed four years ago, mainly because of declining enrollments in the area. The new pattern has left us with a K-6 building and a different student population. Before the change we had mainly the sons and daughters of professionals, college professors, and the like. Now we have few of the "high" and many "lows," with few from the "middle." And for the first time we have several colored children.

I'm pleased with the Math Lab and with the services received from the company we're dealing with. In fact, I'm hoping that a Reading Lab can be started next year at X School, in order that we can exchange students with special needs. There's lots of paperwork associated with these special programs and we have specialists coming in virtually every day, including one who works with five Indian children trying to learn English as a second language.

Students in the Math Lab are drawn from those who score a grade level below their current placement as determined by scores on the Stanford Achievement Tests; the program begins at the second grade. We used to have remedial summer school, Saturday morning classes, after school sessions, and other ways of handling deficiencies, but no one wants to be seen as a "dummy." The Math Labs have been much better from that standpoint. We try not to schedule the students out of another course, such as reading, where special efforts also are underway. We don't make them go to the Lab, but very few refuse. Occasionally, I'll have a child say to me: "I don't want to go to Math Lab anymore." And I tell him: "Okay. But you can't make that choice by yourself, your dad or mother will have to ask me, too."

I then moved to the rather cramped Lab where Joseph and his young aide were working. "Yes, it's a form of prescriptive learning," Joseph confirmed. "Tests are scored and diagnosed; prescriptions reported back by the company (based in Chicago)." Joseph paid high tribute to this organization, citing its fine inservice training, the consistent maintenance of equipment, the quality of consultative assistance, and the computer-based testing-prescriptive printouts as all outstanding. It was unusual, albeit low-keyed, praise for "back-up" services.

I raised a specific question concerning the level of test diagnosis, referring to a study conducted by one of our research assistants who concluded that gross difficulties, which teachers already grasped, were the main product of test utilization, with instructors receiving little aid in pinpointing a pupil's idiosyncratic needs. Again, Joseph remained

steadfast in his praise of the test materials. His testimony was important because it reflected a dozen years of mathematics instruction in elementary schools plus seven as an instructor in the Vortex Basic Skills Program. Joseph then explained:

> *We work around their schedules as much as possible. Don't want to create "hostile" kids because those who come in here have a history of failure; after all, that's how they get here. The Lab is not "instead of" but is "in addition to." Our focus is strictly on the individual and his need for skills improvement. The "Company" has urged us to do more small group work at the table here, but I'm opposed. We do combine episodes with the hardware with pen and paper reinforcement drills, but our main purpose is to make this period as different as possible from normal classrooms.*

A group of fourth graders began to enter the room. I watched them work with the wide array of both "hard" and "soft" learning aids, recalling a K-1 classroom of several years ago at the University of Hawaii's Laboratory School where I first saw children functioning extremely well with technology. Students there paired off and assisted one another, as a few did in the Vortex setting. But the effects of Joseph's operational philosophy were apparent: students were working mainly on an individualistic basis. A few were counting on their fingers, and I asked Joseph: "If you had the space, would you want an abacus here?" "Definitely," he replied; "There's a difference in 'hands-on' approaches, and you can see the need for more manipulative experiences."

A girl displayed very low levels of frustration tolerance, and I commented to Tory, the aide. "Yes, she doesn't have much patience," Tory acknowledged, "and the older they get, the more you see that kind of behavior. That's why I dread going to School X to pick up their sixth graders." I made that trip with Tory, and the reasons for her uneasiness were clearly evident. The same activity raised other questions that must be faced in the development of special programs.

We drove about six blocks to X where Tory parked her car. The pupils were on the verge of having a "milk break" and some were angered by the interruption. Their teacher promised they could have the milk when they returned. The bus then transported us back to the Lab where students were to spend approximately thirty-five minutes. "Some days the buses aren't on schedule and we lose a few minutes," Tory said.

Once in the Lab, students rather quickly--surprisingly fast, in my estimation--began working. A few words or gentle shoulder taps from Joseph calmed two or three boys and Tory explained to a girl: "If you don't watch what you're doing, the recording won't stay in time with the problems." It was a productive session; almost all pupils finished tasks assigned by their individual folders and were checked-off by Tory or Joseph. We reassembled for the return bus, a different one arriving from yet another corner of the district.

Getting students ready to learn is a crucial matter, particularly those who have a history of learning "failures." Joseph and Tory performed nobly given the constraints of time, space, and scheduling. Their efforts underscored the importance of people who link children to the technology. The role of instructional personnel who function at that point where learners interface with machine appears certain to grow in significance. My own children have had negative experiences in similar circumstances, and it was a pleasure to watch the scene described above. But the "paperwork" often associated with such efforts remains a formidable consideration, and Joseph and I discussed the need for computer-managed systems. The task of blending lab activities with classroom routines also must be faced. Joseph's caution that the Lab experience is strictly "in addition to" does not eliminate the classroom teacher's resistance to interruptions nor does it negate the pupil's need for some type of synthesis.

At the moment, media-oriented programs, such as the Math Lab, stand out as isolated enclaves, analogous to the Language Labs spawned by NDEA legislation of the 1950s, a promising and undeveloped aspect of public schooling not yet integrated into a new conceptual and operational mode of education.

VORTEX AS HARBINGER

"Have you thought about the possibility of not getting valid responses?" asked Kurt. He was alluding to the potential effects of a series of retrenchments in programs and staff ordered by the board of school directors. Later, we discussed the ramifications of his query, both of us admittedly seeking the proverbial "light at the end of the tunnel." Kurt was more pessimistic, perhaps grimly realistic, about the future of public schools, contending that both urban and rural school districts alike are faced with severe financial constraints.

> *[He remarked:] It seems inevitable that new alternatives must be developed to adequately fund public education. All interested parties will have to join in finding new approaches to this problem. However, all parties should also beware of the dangers inherent in making staff reductions and program curtailments the first items to be cut in retrenchment endeavors. Such policies are ultimately self-defeating and work to the detriment of the total enterprise.*

Later, his concerns were echoed by a building principal who insisted:

> *What you're seeing here is the destruction of the neighborhood school concept by economic problems. These old buildings simply can't be justified anymore.*

Yet my experience in Vortex, despite its outwardly forbidding veneer, left me with a belief that a new era of American schooling is underway. The signs were evident, in my opinion, although their interpretation and significance are open to dispute.

First, the high school was functioning well. Student morale was high; teachers and pupils dressed smartly, acted responsibly, and held mutual respect for one another. Administrative-staff-student relationships contributed to a healthy condition. Relationships with the Catholic system also were good. Catholic Youth Center facilities were used as a home site for the high school's basketball games as well as many other extra-curricular activities sponsored by the district. In general, there was a high level of cooperation between parochial and public schools in Vortex.

Second, Vortex instructors struck me as being living embodiments of Ron Corwin's (1965) "militant professionals." Kurt, Paul and James and a junior high advocate of the feminist movement stood out, but they were not the only ones. Today's highly-organized teachers, marked by their adherence to comprehensive bargaining agreements and demands for participation in decision-making, may not fulfill the traditional roles many administrators and parents hold for them. Nonetheless, they were working--and working very hard. As Kurt declared: "At the bottom line, it's the classroom where it all counts."

Events in this setting suggest the need for observers to distinguish between militant teachers willing to strike--but lacking sophistication with respect to bargaining techniques, a factor evident in another CSSE site--and seasoned instructors who can cope with classroom demands while engaged in negotiations. A member of the IU staff, for example, regards the president of the AFT local in Vortex as an "authentic professional unionist."

And Kurt, who is vice-president, teaches "collective bargaining" at Penn State University's extension center. But the scene in Pennsylvania may be altered. Act 195, the state's public employee bargaining law, which guarantees state and local employees the right to strike and teachers the right to unionize, is being reviewed by a special commission appointed by the governor. This particular bit of legislation is regarded as one of the most liberal statutes of its type; and since its inception in 1970, Pennsylvania has witnessed a record 361 teacher strikes.

When I commented to a board member about the task orientation of instructors, she remarked: "That's interesting, because a few weeks ago I was sharply critical of them for putting in so few clock-hours of instruction." It is true, as she notes, that bargaining agreements have sharply delineated the central elements of a teacher's job. For example, Paul and James reacted to my initial overture with considerable reserve and skepticism. The unspoken query was "Why should we help you with your study?" Two important qualifications must be raised, though. One is the obvious fact that good teaching is a tough, demanding job. It always has been, and in the eyes of this observer--who has been a high school instructor--it is getting tougher. The assistant principal of the high school supplied the second demurral. "Teachers will work very hard," he submitted, "if it means something to them." He was alluding to their participation on committees preparing documents for the upcoming accreditation visits. "Both of us [school administrators and teaching staff] fought to prevent the recent cutbacks," Jack continued. "We lost, but were united in a common cause." He professes great respect for Kurt in the latter's role as AFT representative, calling him a "reasonable, intelligent man." Overall, though, it appeared that AFT's strength was concentrated in the secondary schools. There was more evidence of NEA-PSEA literature in the elementary buildings and there was less adherence to work rules.

A third factor is embodied in an ambitious program of educational television. Vortex schools are tied to a PBS station approximately fifteen miles from the city. School buildings--and much of the city--are also wired for cable-TV. Students engage in production and performance activities beginning with the primary grades, frequently preparing video tapes for local use. ETV is part of the audio-visual department, and its director, who is an outspoken advocate of the medium, views instructional television as having a major influence on science education in the lower grades: "Science for the Seventies" and "Measure Metrics" are two of the products used. The director was once a physics teacher and admits that scheduling complications in secondary schools are seriously restricting utilization of ITV at that level. Continued dependence on conventional forms of delivery systems may become prohibitively expensive and/or face grave challenges with respect to access to energy. In Vortex, at least, the chief ingredients for an alternative system are on hand.

The aggregation of resources devoted to certain types of inservice training, as illustrated in the approach described on page five, reflects a fourth area of potential strength and also spotlights a question posed recently by Donald Schon. Analyzing the problems encountered in two decades of curriculum reform, he asks:

> *What would it be like to make implementation or adaptation central to the enterprise? How might a central institution take on the role of providing the framework, tools, means of assessment, and resources to local schools so that they can become more competent at adaptation or implementation and indeed at design?*

Perhaps the reliance on classroom instructors as a source of ideas, aided by a local university and teachers' union, and linked to the state agency via an intermediate unit, is a meaningful response to Schon's challenge.

Unquestionably, economic constraints are the chief influence in the current educational climate of Vortex. Their impact on social studies and English was cited earlier. A group of building principals furnished a succinct analysis of how monetary ills affect their jobs. "You no longer think of '3-20s' [three classrooms, twenty students per room] but of '2-30s.'"

Economic woes are not likely to ease because the governor's budget allows for no increase in the basic subsidy or school-aid formula. And spokesmen for the Pennsylvania State Education Association charge that current activities signal an attempt to force communities to absorb a larger share of educational costs. However, procedures and processes for delivering the curriculum struck me as more seriously affected by events than the curriculum itself: a major reorganization of schools is underway in Vortex.

Declining enrollments have caused the closing of six elementary schools in recent years and the conversion of one into a junior high. Meanwhile, a feasibility study relative to possible reorganization of the high school with its sister institution into one administrative unit is being conducted by a team of consultants. This action is part of the Long Range Plan and also mirrors both dwindling enrollments and the rising interest in job-related courses. The number of students choosing the vo-tech curriculum in this traditionally academic-oriented high school has quadrupled (40/160) in the last three years with the 1976-1977 sophomore class showing the greatest interest to date. And the Middle School, another component of the Long Range Plan, has already encountered staffing reductions which, according to its supporters, are threatening to "destroy the concept."

In summary, the economic crunch encompassing Vortex schools, the city, and much of northeastern United States is becoming so severe that it is literally forcing overdue recognition of structural changes in our society. From this standpoint, the ESEA legislation of 1965 may have been a forerunner of events to come. "Without federal funds," stressed the chief librarian, "we'd be in worse trouble."

> *Title I gave us a tremendous boost in the 1960s as it provided the wherewithal to develop our system of elementary libraries. A few years ago our budget was roughly $6 per child for materials (Vortex and all Pennsylvania schools furnish free texts); now it's about $2.25, and you know what's been happening to costs of books, magazines, etc! Title I, despite recent changes, and Title IV-b and -c are essential.*

The same point was made by the city's controller. Emphasizing that approximately fifty per cent of the general income fund was tied to federal programs, he said:

> *These figures clearly reflect the amount of dependency that municipalities such as Vortex have on federal programs.*
>
> *It is also clear that without such an influx of federal dollars, the already heavy tax burden of local residents would become intolerable.*

POSTSCRIPT

Our work in Vortex owes much to the associate superintendent, Jay Luttrell. He typifies a vanishing breed of "schoolmen," individuals who entered the field shortly after World War II and have remained pillars of stability throughout the trying years of growth and decline. Jay is nearing retirement. His influence will be missed in Vortex and in the larger world of public education.

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VORTEX SITE VISIT

The introduction to "Vortex" referred to a pair of site-visitor reports. In the first attachment, Jo Day examines relationships between elementary teachers, pupils, and administrators, reflecting on the lasting influence of traditional patterns of interaction. Both she and Beth Dawson treat the use of educational television in the lower grades, an area in which Vortex schools were doing some fine work. Dawson also provides readers with a comprehensive view of a middle school. Her tribute to the principal's leadership, to the latter's philosophy, and the description of how "open space" becomes a learning-teaching medium contrast markedly with the scene portrayed in RIVER ACRES.

SITE VISIT REPORT

Unlike other sites that are considered and consider themselves conservative, Vortex has not been noticeably touched or pushed to change via any state or federal legislation. Federal money is utilized for academic programs, but the predominent atmosphere remains clannish. Teaching, one of the better-paying jobs in this community of light industry, is a friendly male bastion. All elementary principals are males, even though most come from secondary teaching backgrounds.

The school is permeated with family and friendship ties. The discussions and greetings are not of the world of work, but of the workd of a family--argumentative and joking. One teacher is introduced as a mother-in-law, and a couple of children as god-children and nieces and nephews. In a walk down the halls of the newest elementary school or into corridor-like cloak rooms of the old (1884 to 1895) schools, the male principals reprimand women teachers; and these teachers argue (loudly) with them regarding the amount of punishment a group of children should receive, whether or not they have to open the folding doors between rooms, or whether or not their class should attend an event. The principal takes the more liberal view in every case.

Home-school ties are reinforced in the emphasis on developing "good habits." A couple of classrooms respond in unison, "Good morning, Mr. Kuhn," after the principal has said "Good morning, boys and girls" upon entering their classroom. The superintendent says, "Parents have a major role to play in helping to cultivate in their children a love for learning, a capacity for hard work, a sense of determination and perseverance, and a compulsion to respect and to serve others." He continues with recommendations about how to encourage children to develop regular habits. The patriotic and moral aspects handled in the schools include such things as opening exercises in elementary schools. Ten students from intermediate grades use video equipment to produce the following type of program daily:

The pledge to the flag
"My Country Tis of Thee"
A proverb: "The way we think determines how we live."
Announcements: "Continue to bring in your Campbell's Soup labels."

Parents as Advocates

Both in formal interviews and in informal conversations, parents reveal an opinion of the teacher as an educational expert. Parents do not articulate, nor are they interested in defining, what the school should do with academic programs. All programs are introduced by educators, and always with attention to funding arrangement. At no time is it possible for either educators or parents to separate program statements about rationale for selection from financial considerations.

Everyone - PTA and advisory council parents, teachers, and administrators - is very sophisticated when discussing where and how funds are obtained for a variety of programs and the materials utilized in them. The parents watch-dog PTA money by suggesting where an administrator may get materials on the list he has presented to them. They seem well aware of title monies and are pushing the board for a federal coordinator who can advance the cause of obtaining money.

Most programs - such as their planetarium, TV and video equipment, math labs, and textbooks - are described as coming from Title I funds, ninety percent reimbursement from state acts, Campbell's Soup labels, or free offers from commercial establishments such as the "Radio Shack." Not all schools have all of the above, however. These discrepancies between schools are what parents do notice and act on by pushing their principals to find and request programs that are funded in a variety of ways.

Title I Math Labs

The Title I math program is one of the few in Vortex in which children are engaged in individualized instruction and are individually utilizing electronic equipment. The children's ability to use the equipment is such that I had to ask them how they did it, because their movements were too quick for me to follow easily. Here, as in ALTE, the more individualized instruction and electronic equipment were used, the more teachers were available per student.

The principal and the Title I math teacher described the program as follows:

We start with second grade pupils here because it is difficult to get a kid working a year below level at first grade.

The machines are what the Title I math program is about. Kids can do metric or manipulative equipment in the classroom.

We do pre- and post-testing. Originally, we did the post-testing in September. Now it is done in June, and it then becomes the pre-test.

Science in the Elementary Schools

All fourth-, fifth-, and sixth-grade children attend planetarium shows twice a year. In addition, next year, 1300 children out of 6000 will be serviced by two science specialists. For all other elementary school students, however, the state of science and the confusion in an "educational expert's" own mind about what science should be, can best be described in the following words of a principal.

They don't expect, at the elementary level, to cover an entire book. They would rather pull the units they are most comfortable with. But there is a danger here...where we can't have every teacher every year comfortable with the same unit. There has to be a flaw. This is why I can envision a fella teaching everyone. Where that science book would be covered in its entirety as a child passes through the building.

Because right now, a woman in a third grade science book, what's she going to be comfortable with? With something on animals. She arranges a trip to the pet store, to the zoo; they bring in animals. That's a very comfortable situation. But she looks at electricity and it's ridiculous.

But if you have a person teaching science who really loves it, those kids really have a good science program. On the other hand, I've had to almost force someone to put the science kit in their classes. No one wanted to have anything to do with it. You know how science was treated? They got their minimum time allotments in. It's a frightening thing, but I don't think it's the most important thing an elementary school offers. I think it has a very definite function in the full curriculum.

We have equipment now, not a whole lot in these old buildings....but [for] anyone who has had an interest in doing something in science, it's been relatively easy going through the principal and the science people to get that equipment for them. Because, quite frankly, it's just not that popular. There are about 300 elementary teachers and not too many of them are knocking down the doors. We give them the invested amount every building has for every grade level. There are life-like diagrams of the anatomy, big hands-on, done-in-relief type things the kids can feel. These things are there, but if the teachers are comfortable with it, I don't know.

Miscellaneous Quotes

About a new "open plan" school:

He has the best of all worlds - an open school (physically) with traditional programs of graded, self-contained classes. And lots of specialists.

About elementary science:

Every year the elementary teachers cover the first chapter, "What is a scientist?"

From a high school math teacher with Master's degree in math:

The books are too hung up on theory. Kids don't distinguish between a line and the length the first time through geometry. They just want to get from A to B.... Grade schools are too much into theory also. Some of my third year math students can't divide right.... Even though theoretical math turns me on, most people never go into theory, or need to.... I used to be really fatigued at the end of the day. That happens until you get used to handling the kids. Some teachers never do get used to it.

Jo Day

VORTEX SITE VISIT REPORT

Two and one-half days were spent in a new middle school (grades six through eight). Activities included an extensive tour, interviews, and observation of classroom activities. Extended interviews were held with:

the principal;
a media specialist;
a mathematics teacher;
a science teacher;
a remedial math and reading teacher;
an astronomy teacher, who also operates the planetarium;
two professors of mathematics from the University of Vortex;
two representatives from the teachers' union;
four children.

Briefer interviews occurred with: the vice-principal, a mathematics teacher, a science teacher, two social science teachers, a counselor, and ten or twelve children.

Brief Description of the Middle School

In 1968-69, a long range development study culminated in a district-wide plan to move to a school system of kindergarten through grade 5, grades 6 through 8, and grades 9 through 12. The planning and construction of the middle school I visited was the first step in this plan. The school is estimated to have cost 6.2 million dollars and was commissioned to incorporate the educational needs that were two years in planning. This beautiful building includes a planetarium, three gymnasia (one large, one small, one for children with special physical problems), a swimming pool, a small theatre, and extensive music facilities. The theatre and swimming pool can be secured from the rest of the school and are available for use by the community.

The school is divided into three clusters or houses: each house contains approximately 320 students from all three grades, and classroom space for communication arts, mathematics, science, social sciences and a reading laboratory. Another section of the building contains classroom space for unified arts: art, sewing, cooking, typing, graphics and shop. The three houses and the unified arts area surround a learning resources center and the planetarium. (The reader is referred to the attached schematic representation of the school and its programs.)

One of my first impressions was the order and cleanliness of the school: the walls, floors, etc., are immaculate. This in a school that has been in operation over two years. It was only later, in talking with the teachers and especially the children, that I began to understand the joy and pride with which this school is viewed.

This school is like our home. Why would we want to destroy things? We would only be hurting ourselves. (eighth-grade student)

Pride - or perhaps even more descriptive, an appreciation of the facilities and opportunities for learning in this school - was evidenced in almost every contact I had. This and another theme, that of providing the children with "hands on" experience (to be described later in this report) are the two overwhelming impressions I have of this school. These two themes seem to permeate and direct the activities of all concerned, teachers and students alike.

The principal of the middle school is a dynamic lady who was quite instrumental in the planning of the school. She chose the middle school concept in order to "give back to children a part of their childhood" by combining the security of the elementary school environment (through the use of the three school clusters) with the independence of high school (by allowing children to move freely from one class area to another and to select "elective activities" during three periods each week). The school embraces the open school concept, but in the words of the principal, in three important and integrated ways:

1. open curriculum with flexibility of planning;
2. open structure - the only "bells" are at opening and closing of school. Throughout the day, activities flow fluidly through fourteen time periods called "mods," each lasting twenty-seven minutes;
3. open space - the definition of class area is subservient to curricular needs.

Hurt pride is also in evidence. Only two weeks before my visit, the school board voted to eliminate the three "house captain" positions and replace them with one vice-principal. A house captain is a half-time teacher and half-time administrator, each relating specifically to one of the three houses. Their duties included some of those of an elementary principal, relating personally to the students and teachers in a given cluster; those of a vice-principal, assisting the principal with certain administrative duties; and those of department chairman, assuming curricular responsibility for one of the three areas of unified arts, physical education or music education.

The decision of the school board, presumably based upon economic considerations, is viewed by the principal and the teachers as the first move to eliminate the middle school concept in this district. When I asked why the middle school concept should be under attack, the following reasons were advanced:

> Membership on the board has changed since the decision to go to the K-5, 6-8, 9-12 plan. The current board does not care about the middle school idea.
>
> The principals of the two junior high schools in this city do not want to turn their schools into middle schools.
>
> Everyone is envious of this beautiful school and the education program. If they cannot have the same thing, they want to destroy it.
>
> Money has dried up. We cannot afford to continue with the long range plan.
>
> Changes in enrollment have resulted in a need to reallocate students to buildings.

The observer can make no judgements on the validity of the above reasons. It must be emphasized, however, that these attitudes were reflected in almost all conversations. Only the day before my visit, the above administrative changes had been effected, and this event was continually noted. As one of the children commented: "There goes Mr. _____. He looks so sad because he used to be our house captain but now he is just a teacher and we can't talk to him about problems and stuff anymore." A newspaper clipping was attached to the original report that expressed the situation as viewed by the teachers at this school.

Issues in Mind Prior to this Site Visit

Newspaper clippings and conversations with the site observer prepared me to look for the issues outlined below. While not all were in evidence, it must be noted that this report encompasses only one school in this district.

Budget cuts: How have they affected the curricular program, especially in science?

Budgeting constraints appear to be operational in the apparent move to depart from the middle school concept in this district. They may be playing a role with the teachers and administrators at other schools who do not have the facilities of the middle school. In the middle school itself, however, budget problems were not highly visible. The equipment and materials appear to be adequate, even luxurious compared to most schools. With respect to staffing, the highly qualified media specialist is actually filling a media technician position. And, of course, budget problems are the reason given by the board for eliminating the three house captain positions. It should be noted that the principal has been aggressive in obtaining funding for some programs, e.g., Title III ESEA Staff Development Funds, Title I funds for reading laboratories.

Development of program objectives: is this activity seen as a concern or a need?

A considerable curriculum development effort occurred in the planning of this school. However, no reference to this issue was made by any teacher. When queried, teachers generally replied that they knew what their curricular objectives were and had incorporated these goals into the instructional program. Not seen as a problem here.

Decline in student enrollments: how this impacted curricular programs.

Apparently not a problem in this new school that incorporated the sixth grades from area schools and the seventh and eighth grades from the nearby high school. However, changing enrollment patterns may be part of the reason for the apparent move away from the long range development plan.

Back to the basics: is there a renewed emphasis on basic skills?

"We've never left the basics" is a phrase often heard in this school. And, indeed, the emphasis on "hands on" experience was cited by some teachers as evidence of their commitment to basic ideas and concepts. Conversely, numerous comments were made about the lack of basic abilities of many of the students. Three programs are used to address the problems of children who are deficient in basic skills, but questions still remain about their success:

1. Individualized instruction programs are operational in mathematics and science (ISCS).

   The mathematics program is excellent. The kids learn from it and I like it, but it can't be the only program. You also need a teacher who knows the subject matter at that level and incorporates his or her knowledge into the individualized program. You can't just put a kid into the program and let him or her go for years or even months without the teacher helping along. It's really an advantage to the brighter students who understand what they read. They can read the directions and progress at a much faster rate. But with the slower children who have problems with reading - they probably don't progress as fast as they could otherwise.

   --- *Mathematics teacher*

The science program is great for kids this age. Ordinarily they don't get any physical sciences unless they take chemistry and physics in high school. Here they get an integrated program in the seventh and eighth grades. The sixth grade gets only one and a half hours of science a week; not nearly enough: I try just to get them ready for lab activities for the next year. In this program, they go at their own pace and perform the experiments themselves. They really enjoy it! We had several kids in science competition this year - I think this is primarily because they've had a chance to actually do things themselves.

--- Science teacher

2. Remedial reading program.

   Children who have reading problems identified are referred to the reading laboratories for special assistance. Specific reading activities are designed and individual instruction is delivered.

3. The school store.

   Approximately fifty children of "average or higher ability" but who have reading or math problems work with a remedial teacher in operating the student store. The teacher, a former business man with subsequent training in both mathematics and English, also holds special small group learning sessions with these students. The basic idea is to "teach the children that basic skills are required in everyday life activities." The children keep track of the inventory, make sales and figure change. In addition, they write and deliver commercials for the store via the daily closed circuit television program (to be described in the next section). The store operates during the last time period on three days each week. Unfortunately, I was unable to view this operation in action.

Additional Notes on Issues/Themes Noted During the Site Visit

Individualized instruction. As mentioned above, the individualized ISCS science program is viewed as an excellent way for children to be motivated to learn. Two science classes were observed in which children were performing various types of experiments. One group was subsequently interviewed and it was apparent that the children did not really know what they had been doing. They were following the text outline for the experiment - but were not reading the text information, consisting of eight or ten pages, that accompanied the experiment. When asked whether they had earlier read the text, they replied: "No, we don't have time for that."

One boy told his two classmates that the answer to question 2¢ was "No."
"No, what?" asked one of the classmates.
"It doesn't matter," replied another, "Just get the answer down."

During the math class, one girl was observed taking a pretest. She explained to me that she was ready to check her pretest answers against the key. For each of five skill areas, if she does not get a certain proportion correct, she must work the skill pages for that section. When checking her answers against the key, she incorrectly "passed" herself on one of the skill areas. Question: do we simply assume that "deficiencies" that slip by will be caught on the next pretest?

Individualized instruction is the only way to handle a heterogeneous group of students. I have all levels in this class and cannot possibly

work with thirty students. They help each other, of course, but I have to supplement the material with lectures.

--- Mathematics teacher

Difficulty level of materials. This issue was raised only by the social science teachers. Of possible interest is the fact that this is the only area (of science, math, social science) in which an individualized curriculum is not operative.

The seventh and eighth grade materials are not bad. But the sixth grade text is too difficult, even for the good students. It's way above their heads. We only have the text - no supplementary materials to go along with it. So much of the kindergarten through grade five social science curriculum is just memorization of facts. But here we're really trying to introduce thinking about the social sciences in a logical way. It should overlap with the other disciplines. But the text is impossible. I don't have much hope for any changes unless we could get supplementary materials.

--- Social Science teacher

"Hands on" learning. As mentioned above, the opportunity to do, to experience, was frequently mentioned as one of the best qualities of this school's curriculum. Previously described are the science and mathematics programs that integrate an individualized approach with the opportunity to perform experiments. In addition, the school store incorporates a unique philosophy related to "learning through doing." Other activities also deserve mention as reflecting this general attitude.

The Learning Resource Center is literally the center of the school. A well-equipped library is surrounded by comfortable lounge chairs. The number and variety of books, including multiple copies, is most impressive. A glance at the library checkout cards in the back of the books did not indicate a high degree of utilization, however. The Learning Center is open only during school hours and may be used for fifteen minutes before school, during the last period of the day or when a teacher sends students to the Center. When I asked why the Center was available on such a limited basis, I was told that kids this age are not as interested in libraries as are graduate students. I wonder.

Around the Learning Resource Center are twenty-four carrels with plug-in head sets and dial-up units. The children may dial (by pushing buttons similar to a touch-tone telephone) any one of thirty-two recorded audio programs. This facility is maintained by the media specialist and some programs are changed weekly. Examples of use include the German program in which eight- or ten- minute tapes are recorded weekly. Also available are tapes on photography, short plays, topics in social science. This facility is extensively utilized by the reading laboratories that can also remotely access the audio tapes. Equipment is available to record and immediately play back. An experimental use of this facility has been to record lessons for children with reading problems, so they might listen as they read along. Another teacher requested some music. It is possible to record the audio tapes from almost any source: other tapes, records, live performance. The kids love it. The teachers seem to be using it quite extensively.

Another program using the "hands on" approach is the closed-circuit television. This project is organized by the media specialist. Each morning a seven-minute program is broadcast to all classrooms. The program consists of "local" news, the weather for that day, upcoming events, announcements, etc. Included are the commercials for the local store.

The program opened with the Pledge of Allegiance and the Star-Spangled Banner. One girl operated the camera that was directed to a flag pinned upon the wall while another girl was focussing her camera on the two "anchor-persons of the day." Another student was operating the controls to determine which camera was "live" - televising the picture. Still another student was queuing up the video tape of the commercial that had been shot earlier that week. Another was operating the music level for fade in and fade out.

The two newscasters read their bulletins for the day with some rather professional switching from one to the other. The backdrop was set up for rear projection and another student was operating the rear slide projector to change the background scene as appropriate. The weather forecast was given for the day.

The entire thing looked like grand chaos. Eleven children running this show. One girl could not get the commercial ready and the media specialist quickly stepped over to help.

It was all over in seven minutes. It seemed like twenty to me. I was a nervous wreck.

"A great show this morning," commented a teacher right after the program. Another site observer had watched from one of the monitors in a classroom - it all looked smooth from that end, he later reported to me.

Throughout the entire production, the media specialist was everywhere - calmly and gently. "It's all in the idea of having fun. And they're learning that this is not so frightening. Anyone can work cameras and produce shows. Tomorrow we're going to try to videotape the weather portion of the program outside, just before school starts, and then play it during the program."

--- Notes from the observer

<u>Science is for the future</u>.

Visitor: Why is science important?

Student: Because we need scientists to go to the moon and make important discoveries.

Visitor: But not everyone will be a scientist, so why should all kids learn about science?

Student: Because no one knows what he will be when he grows up and we have to be prepared.... Anyway, even if we're not a scientist, lots of jobs need some science.

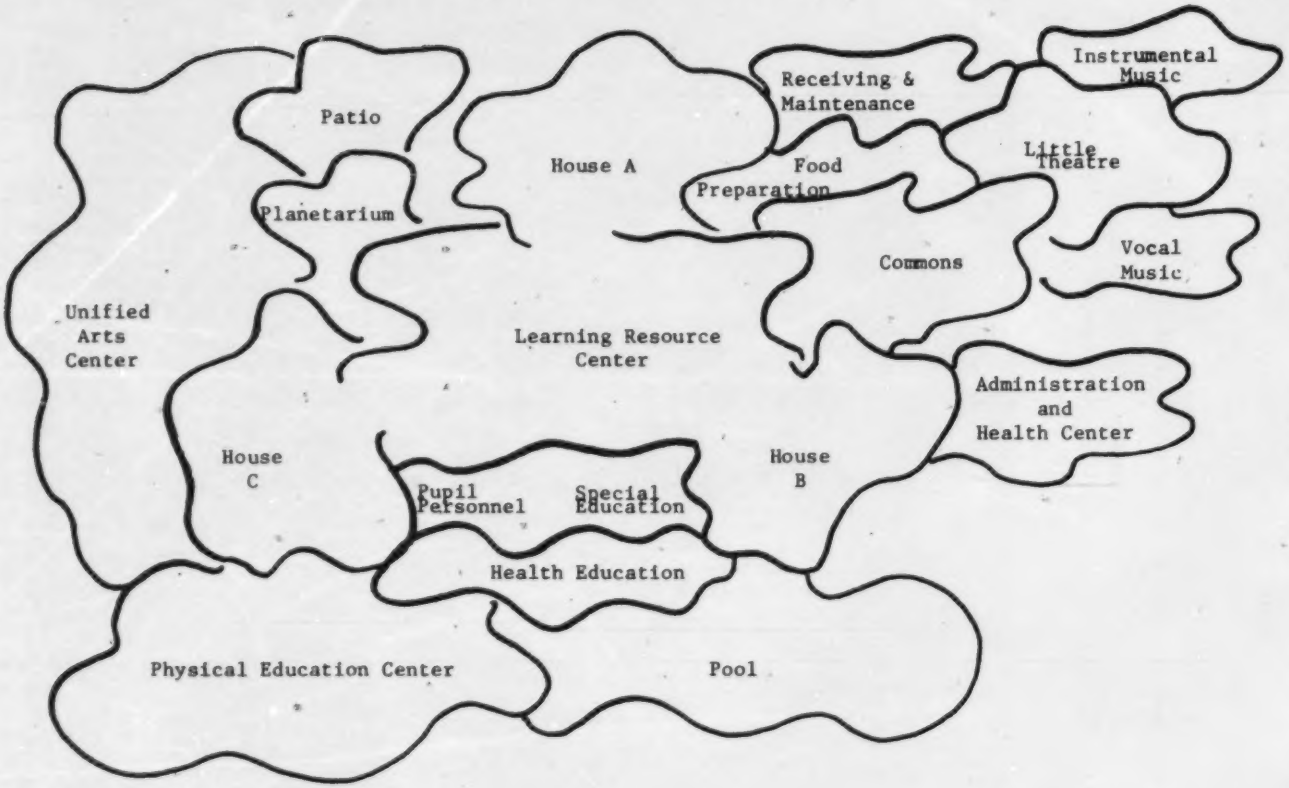
Visitor: But what about people who don't work in a job that needs science? What about mothers who stay home with their children?

Student: Well, they might want to go to work someday, and then they might need science.

Though the above comments are from students, the science teachers expressed the same ideas, albeit in more sophisticated language. Science is important because we might need it someday. No reference to consumer need. More importantly, no reference to needing science for today. Why?

Elizabeth K. Dawson

WEST VORTEX MIDDLE SCHOOL



AREA RELATIONSHIPS

TOTAL CAMPUS

NOTE: This drawing is intended to demonstrate relationships between spaces and is schematic only. True proportion has not been observed, and shapes are not intended to represent desired design.

Gordon Hoke, Associate Professor of Education in the Center for Instructional Research and Curriculum Evaluation (CIRCE), University of Illinois College of Education, brings to the CSSE project a reputation as a specialist in innovation and school-community relations. His experiences include two years directing the Demonstration Project for the Education of Gifted and Talented Children, Sterling, Illinois (jointly sponsored by USOE, the Illinois Office of Education, and the University of Illinois), and participating in several research and evaluation projects with CIRCE. Currently on sabbatical, he is conducting a study of rural development in industrialized societies.

Gordon received his Ph.D. from Michigan State University in 1965. His background includes high school and junior college social studies instruction, as well as teaching at the university level. He has participated in numerous special institutes and conferences, serving as a presenter at conferences in Bucharest (1972), Toronto (1974), and Allerton Park (1976). In addition to his work through CIRCE with such groups as teachers in early childhood education, and in cooperative extension services, Gordon has also served as a consultant for a variety of educational and social service institutions. These include state departments of education, community health service organizations, and numerous parochial

and public school systems throughout the nation. Among his publications are articles on the "custodial obligations" of British and American secondary schools (Comparative Education, March 1966), and on community involvement in public schools (Illinois Principal, Fall 1973 and Spring 1975). He is also the author of Goodbye to Yesterday: Talent Development in a Changing Era, a report of a school-community study in Effingham, Illinois, 1971-72.

Gordon and his wife, Marilee, and their three daughters currently live in Champaign, Illinois. He is, however, an aspiring member of the Chamber of Commerce of Arthur, Illinois, and is known in CIRCE circles as Arthur's "Chief Booster."